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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
NGUYEN, KEVIN M	
ART UNIT	**PAPER NUMBER**
2674	

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/844,881	TEMKIN ET AL.	
	Examiner	Art Unit	
	Kevin M. Nguyen	2674	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 2-6 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 2-6 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is made in response to applicant's argument filed on 08/08/2005. Claims 2-6 are original or previously presented. Thus, claims 2-6 are currently pending in the application. Applicant's arguments, see pages 5-11, with respect to the rejections of claims 2-6 under the statutory basis for the previous rejection have been fully considered and are not persuasive. Therefore, the rejection has been maintained.

Specification

2. The amendment to the specification filed 08/08/2005 is entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dumoulin et al (newly cited, US 5,526,812) in view of Funda et al (newly cited, US 5,749,362).

4. As to claim 2, Dumoulin et al teach a stereo display system associated with a method, the stereo display system comprising:

the synchronization processes are addressed by "For both embodiments of the invention the computer image must be registered (coincide) with the external structures as viewed by operator 350. Initialization may be accomplished by manual input from the

operator to rotate, translate and scale the computer generated image(s) until they coincide with the scene observed through the semi-transparent screen, or by employing tracking device 50 to set initial parameters. Once the 3D model and the visual image of patient 1 are aligned, tracking device 50 keeps the view angles and field of view consistent. This allows real-time interactive synchronization between the operator's view of patient 1 and the computer generated image(s)" (see figs. 1 and 2, col. 6, lines 6-18). Thus, the synchronization processes are defined by a stereoscopic viewer (252) (fig. 2, stereo graphics) and the workstation view input device (60) (fig. 2, scene components).

Dumoulin et al further teach the workstation view input device (60) may be any input device (col. 4, lines 39-40).

Accordingly, Dumoulin et al teach all the subject matter claimed except for the use of an input device instead of a haptic scene input device.

However, the input device and the haptic scene input device have been recognized in the art as equivalent as evidenced by Funda et al. Funda et al expressly teach that the benefit of using a haptic scene input device is defined by a method of relaying non-visual information to the surgeon is tactile feedback, which positioned a graphical object (detecting of virtual object) and vibrating with appropriate frequency and amplitude (determining and applying the tactile feedback) (col. 16, lines 53-65). Thus, the haptic scene input device/haptic scene components are defined by detection of virtual object and determination/application of the tactile feedback. "The surgeon wears stereoscopic liquid crystal (LC) goggles 273" and "a method of relaying non-visual information to the surgeon is tactile feedback, which positioned a graphical object

(detecting of virtual object)", that defined the user views the 3-D graphics and haptics scene components.

Therefore, it would have been obvious to one of ordinary skill in the art to replace the input device in Dumoulin et al with the haptic scene input device of Funda et al to achieve the benefit of improving the quality of the 3D graphic is readily discernible, while do not distract him from his positioning task or otherwise interfere with his work as taught by Funda et al (col. 16, lines 65-67).

Moreover, where the claimed differences involve substitution of interchangeable equivalents and the reason for the selection of one equivalent for another was not to solve an existent problem such substitution has been judicially determined to have been obvious. See In re Ruff, 118 USPQ 343 (CCPA 1958).

5. As to claim 3, Funda et al teach tactile feedback conveyed to the surgeon through a hand-held or instrument-mounted input device (such as a joystick) can be used to alert the surgeon that he has positioned a graphical object or a surgical instrument in the vicinity of the current anatomical feature of interest. The tactile feedback can be delivered to the surgeon's hand or finger (whichever is in contact with the joystick) by instrumenting the joystick control with a computer controlled vibrator (col. 16, lines 55-63).

6. As to claim 4, Funda et al teach a graphical object (detecting of virtual object) tactile feedback conveyed (duplicated the force) to the surgeon through a hand-held or instrument-mounted input device (such as a joystick) can be used to alert the surgeon that he has positioned a graphical object (an actual object).

7. As to claim 5, Dumoulin et al teach "the computer image must be registered (coincide) with the external structures as viewed by operator 350. Initialization may be accomplished by manual input from the operator to rotate, translate and scale the computer generated image(s) until they coincide with the scene observed through the semi-transparent screen, or by employing tracking device 50 to set initial parameters. Once the 3D model and the visual image of patient 1 are aligned, tracking device 50 keeps the view angles and field of view consistent. This allows real-time interactive synchronization between the operator's view of patient 1 and the computer generated image(s)" (see col. 6, lines 6-18). Thus, the synchronization processes are defined by a stereoscopic viewer (252) (fig. 2, stereo graphics) and the workstation view input device (60) (fig. 2, scene components).

Dumoulin et al further teach the workstation view input device (60) may any input device (col. 4, lines 39-40).

Funda et al teach a method of relaying non-visual information to the surgeon is tactile feedback, which positioned a graphical object (detecting of virtual object) and vibrating with appropriate frequency and amplitude (determining and applying the tactile feedback) (col. 16, lines 53-65). Thus, haptic scene components are defined by detection of virtual object and determination/application of the tactile feedback.

8. As to claim 6, Dumoulin et al teach "a stereoscopic viewer 252 is synchronized to the sequencer 198 and operates to block the vision of the operator's left or right eye allowing the opposite eye to view the image on semi-transparent screen 250 for an instant and vice-versa. This allows operator 350 to see the left image with the left eye

while the right eye sees nothing and the right image with the fight eye while the left eye sees nothing in rapid succession" (col. 5, lines 59-66). Thus, different images left eye and right eye define the interlacing video display and buffered delivery of image data to different data lines.

Funda et al teach a method of relaying non-visual information to the surgeon is tactile feedback, which positioned a graphical object (detecting of virtual object) and vibrating with appropriate frequency and amplitude (determining and applying the tactile feedback) (col. 16, lines 53-65). Thus, haptic scene components are defined by detection of virtual object and determination/application of the tactile feedback.

Response to Arguments

9. Applicant's arguments filed 08/08/2005 have been fully considered but they are not persuasive. In response to applicant's argument stated in paragraph B (b) at page 4. Examiner clarified the full paragraph 4 above.

10. Applicant argues that Dumoulin does not teach recited the limitation in claim 2 "the synchronizing stereoscopic graphics and haptic scene components" at page 6, lines 1-3, and page 7, lines 6-15. In response, examiner respectfully disagrees. As stated *infra* with respect to claim 2, Examiner finds that Dumoulin discloses the synchronizing stereoscopic graphics and haptic scene components. See col. 5, lines 60-64, disclosing, "a stereoscopic viewer 252 is synchronized to the sequencer 198 and operates to block the vision of the operator's left or right eye allowing the opposite eye to view the image on semi-transparent screen 250." See col. 4, lines 54-60, further disclosing, "The computer generated image is provided to semi-transparent screen 250

which is interposed between patient 1 and operator 350. Semi-transparent screen 250 provides a desired mixture of external structures of patient 1 seen by operator 350 and the computer generated image from model workstation 100. Semi-transparent screen 250 may receive input signals from the operator, for example, through workstation view input 60." See col. 4, lines 34-39, further disclosing, "Model workstation 100 receives input data from a workstation view input device 60, and from tracking device 50 following the position and orientation to select the orientation for displaying internal structures of patient 1. Workstation view input device 60 may be a computer pointing device such as a mouse or trackball, or any input device." See col. 5, lines 53-56, further disclosing, "Sequencer 198 passes the left computer generated image to semi-transparent screen 250. Sequencer 198 then passes the right computer generated image to semi-transparent screen 250. Sequencer 198 alternates many times per second, in synchronization, between right and left views." Accordingly, the semi-transparent screen 250 corresponds to the virtual environment/scene component as claimed; and the stereoscopic viewer 252 corresponds to the stereoscopic graphics as claimed. Therefore, it would have been obvious to recognize that Dumoulin's sequencer 198 controls the virtual environment/scene components that is created from the tracking device 50 and the input device 60 synchronize the stereoscopic graphics. It is noted that as stated *supra*, Dumoulin further discloses "Workstation view input device 60 may be a computer pointing device such as a mouse or trackball, or any input device," as substituted by Funda, see col. 16, lines 55-56, disclosing, "tactile feedback conveyed to the surgeon through a hand-held or instrument mounted input device." Therefore, it

would have been obvious to combine the Dumoulin's reference with the Funda's reference to meet the claimed limitation of "the synchronizing stereoscopic graphics and haptic scene components."

11. Applicant argues that "neither Dumoulin nor Funda teach "a haptic virtual environment" or computing collision detection or force feedback," at page 6, lines 15-16. In response, examiner respectfully disagrees, as stated *supra*, the combination of Dumoulin teaches the semi-transparent screen 250 corresponding to the virtual environment/scene component, with Funda teaches tactile feedback (see col. 16, line 65).

12. In response to applicant's arguments, the recitation "a haptic virtual environment" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

13. Applicant argues that "haptic properties (e.g. stiffness, damping, static friction, dynamic friction) at page 7, lines 18-19. On the other hand, applicant argues that "haptics in the context of providing a calibrated sense of touch, via a haptic device," at page 6, lines 16-17. In response, examiner recognizes that the feature "haptic" contains

various inconsistencies and/or ambiguities so that examiner is unable to understand what kinds of "haptic, e.g. dynamic friction or sense of touch" apply to the invention?

14. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., feedback loop to synchronize with the graphics, at page 8, line 9) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

15. Applicant argues that "Funda clearly defines an analog display without the use of any computers or any means to generates graphic scene components," at page 8, line 15 through page 9, line 2. In response, examiner respectfully disagrees as stated *infra*, examiner finds that Funda discloses the set of input/output devices attached to input/output interface 248 of computer 243 (see col. 6, lines 19-20).

16. Applicant argues that "the virtual object is not detected as implied by Funda," see page 9, lines 3-15. In response, examiner respectfully disagrees, as stated *supra*, Dumoulin discloses the semi-transparent screen 250 corresponding to the virtual environment/scene component.

17. Applicant argues that "at each point of collision, the operator feels the hardness and the texture of the object at that point, as disclosed by Dumoulin," at paragraph (e). In response with respect to claims 3 and 4, as foregoing mentioned, applicant argues that "haptic properties (e.g. stiffness, damping, static friction, dynamic friction) at page 7, lines 18-19. On the other hand, applicant argues that "haptics in the context of providing

a calibrated sense of touch, via a haptic device," at page 6, lines 16-17. Therefore, examiner recognizes that the feature "haptic" contains various inconsistencies and/or ambiguities so that examiner is unable to understand what kinds of "haptic, e.g. dynamic friction or sense of touch" apply to the invention?

18. Applicant argues that "the synchronization process recited in claim 5 and described in the instant specification, which refers to time synchronization required between the graphics environment that is updated at 30Hz and the haptics environment that is updated at 1,000 Hz" at paragraph (f). In response, examiner did not find that description the specification.

19. Applicant argues that "coupling of images based virtual environment to a haptic scene graph and then rendering/displaying the forces as recited in claim 6, is not taught by Dumoulin and Funda," at paragraph (g). In response, as stated *supra*, the combination of Dumoulin discloses the semi-transparent screen 250 corresponding to the virtual environment/scene component as claimed, with Funda discloses the haptic as claimed.

For these reasons, the rejections based on Dumoulin and Funda have been maintained.

Conclusion

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Nguyen whose telephone number is 571-272-7697. The examiner can normally be reached on MON-THU from 8:00-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick N. Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the Patent Application Information Retrieval system, see http://portal.uspto.gov/external/portal/pair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin M. Nguyen
Patent Examiner
Art Unit 2674

KMN
October 16, 2005

PATRICK N. EDOUARD
SUPERVISORY PATENT EXAMINER